

WHAT IS CLAIMED IS:

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1. A communication method used when a mobile station receives a signal from a base station in a mobile communication system, comprising the steps of:
- 10 deciding one or a plurality of mobile stations which can communicate with said mobile station via a predetermined wireless network and which can receive a signal from said base station; said one or a plurality of mobile stations
- 15 sending a signal destined for said mobile station received from said base station to said mobile station via said predetermined wireless network; and said mobile station synthesizing a signal received from said base station and said signal
- 20 destined for said mobile station received from said one or a plurality of mobile stations.
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2. The communication method as claimed in claim 1, further comprising the steps of:
- forming said predetermined wireless network by said mobile station and other mobile
- 30 stations in said mobile communication system; selecting said one or a plurality of mobile stations among said other mobile stations as mobile stations for diversity reception; and said one or a plurality of mobile stations
- 35 selected as used for diversity reception of said mobile station sending said signal destined for said mobile station received from said base station to

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said mobile station via said predetermined wireless network.

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3. The communication method as claimed in claim 2, further comprising the steps of:

10 selecting said one or a plurality of mobile stations among said other mobile stations such that communication condition between said one or a plurality of mobile stations and said base station is better than predetermined condition.

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4. The communication method as claimed in claim 3, further comprising the steps of:

20 selecting said one or a plurality of mobile stations among said other mobile stations such that each level of signals received from said base station by said one or a plurality of mobile stations is higher than a predetermined level.

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5. The communication method as claimed in claim 2, further comprising the steps of:

30 said mobile station sending participation requests which are requests to operate for diversity reception of said mobile station, to said one or a plurality of mobile stations via said predetermined wireless network;

35 each mobile station which receives said participation request determines whether said each

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mobile station can receive a signal from said base station;

each mobile station which can receive a signal from said base station recognizing that said
5 each mobile station operates for diversity reception of said mobile station which sends said participation request, and sending a participation response which indicates acceptance of said participation request to said mobile station via
10 said predetermined wireless network; and

said mobile station recognizing that said each mobile station which sends said participation response operates for diversity reception of said mobile station.

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6. The communication method as claimed in
20 claim 5, further comprising the steps of:

said each mobile station which receives said participation request measuring a state of receiving a signal from said base station;

said each mobile station in which said
25 state is better than a predetermined state recognizing that said each mobile station operate for diversity reception of said mobile station and sending said reception response to said mobile station via said predetermined wireless network.

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7. The communication method as claimed in
35 claim 1, wherein said predetermined wireless network is a mobile ad-hoc network.

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5 8. A mobile station which receives a
signal from a base station in a mobile communication
system, comprising:

a first transceiver unit which transmits
and receives a signal between said mobile station
and said base station;

10 a second transceiver unit which transmits
and receives a signal between said mobile station
and a first mobile station;

network forming control means which forms
a predetermined wireless network including said
15 mobile station and said first mobile station by
communicating with said first mobile station by
using said second transceiver unit; and

signal synthesizing means which
synthesizes a signal received from said base station
20 by said first transceiver unit and a signal destined
for said mobile station received from said first
mobile station by said second transceiver unit via
said predetermined wireless network.

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9. The mobile station as claimed in claim
8, further comprising;

30 transfer control means which sends a
signal destined for a second mobile station received
by said first transceiver unit to said second mobile
station via said predetermined wireless network by
said second transceiver unit.

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10. The mobile station as claimed in claim 8, further comprising:

participation request send control means
5 which sends a participation request to said first mobile station by said second transceiver unit via said predetermined wireless network, said participation request being a request to operate for diversity reception of said mobile station;
10 first storing means which stores said first mobile station as used for diversity reception of said mobile station when said second transceiver unit receives a participation response from said first mobile station via said predetermined wireless
15 network, said participation response indicating that said first mobile station accepts said participation request;

wherein said signal synthesizing means synthesizes a signal received from said base station
20 by said first transceiver unit and a signal destined for said mobile station received from said first mobile station by said second transceiver unit via said predetermined wireless network, said first mobile station being stored in said first storing
25 means.

30 11. The mobile station as claimed in claim 9, further comprising:

first determining means which determines whether a signal from said base station can be received when said second transceiver unit receives
35 a participation request from said second mobile station, said participation request being a request to operate for diversity reception of said second

09743243-122700

mobile station;

second storing means which stores said second mobile station when said first determining means determines that a signal from said base

5 station can be received;

participation response control means which sends a participation response, to said second mobile station from which said participation request is received, by using said second transceiver unit
10 via said predetermined wireless network, said participation response indicating that said mobile station accepts said participation request; and

wherein said transfer control means sends, by said second transceiver unit, a signal destined
15 for said second mobile station to said second mobile station when said first transceiver unit receives said signal destined for said second mobile station, said second mobile station being stored in said second storing means.

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12. The mobile station as claim in claim
25 11, further comprising:

receive state measuring means which measures a state of receiving a signal from said base station when said second transceiver unit receives said participation request from said second
30 mobile station via said predetermined wireless network;

second determining means which determines whether said state measured by said receive state measuring means is better than a predetermined
35 state;

wherein said second mobile station which sends said participation request is stored in said

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second storing means and said participation response control means sends said participation response, by said second transceiver unit, to said second mobile station via said predetermined wireless network when
5 said first determining means determines that a signal from said base station can be received and when said second determining means determines that said state is better than said predetermined state.

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13. The mobile station as claimed in claim 8, wherein said predetermined wireless network
15 formed by said network forming control means is a mobile ad-hoc network.

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